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ABSTRACT

A study was designed to test predictability of actual occupation from expressed vocational choice when combined separately with measures of career development. Subjects were 1,994 members of a national study of high school career development who were working more than half-time three years later (1976). Expressed vocational choice and measures of career development were collected through administration of the Assessment of Career Development (ACD) which allows choices and occupations to be categorized into Holland-type job clusters. Weighted hit rates and coefficient Kappa were used in the analyses; the criterion was occupation held two years after high school. High scores on the ACD scales used did not enhance the predictability of vocational choice. Furthermore, high scoring on the ACD were not better predictors of their future occupation than low scoring students. Findings seemed to lay open to question the practicality of career development measures in certain counseling-related activities. The sample may, however, simply not have had the time to find, train for, and work in occupations of their choice. Results implied that counselors should not rely on career development as an indicator of future career behavior and that future research should explore usefulness of measures of career development. (YLB)

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Combining Expressed Vocational Choice and Measures of Career Development
to Predict Future Occupational Field

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Abstract

This study described the predictability of actual occupation from expressed vocational choice when combined separately with measures of career development. Subjects were those members of a national study of high school student career development who were working more than half-time three years later (N=1994). Choices and occupations were both categorized into Holland-type job clusters. The measures were selected scales from the Assessment of Career Development (ACD). Weighted hit rates and coefficient Kappa were used in the analyses. The criterion was occupation held two years after high school. High scores on the ACD scales used did not enhance the predictability of vocational choice. Furthermore, high scoring students on the ACD were not better predictors of their future occupations than low scoring students. Potential reasons for the findings and suggested future research directions are discussed.

The author wishes to thank the American College Testing Program for making the data used in this study available to him.

Combining Expressed Vocational Choice and Measures of
Career Development to Predict Future Occupational Field

Research concerning the use of expressed vocational choice as a predictor of future career status has proven both provocative and useful. Investigations have reported the consistent predictive validity of this easily assessed measure and concluded that vocational choice has a legitimate place within the career counseling process.

Holland and Gottfredson (1975) concluded that retrospective vocational aspirations are powerful predictors of subsequent choices and jobs and cannot be ignored as superficial and unreliable. Whitney's (1969) review examined large-scale longitudinal studies and reported that expressed choice predicted future employment as well as interest measures or combinations of personality and background characteristics.

Holland and Lutz (1968) studied college students' initial and final vocational choices and reported the predictive efficiency of expressed choice to be about twice that of a vocational interest measure. Wiggins and Weslander (1977) found that expressed vocational choices were more predictive of future occupations than interest inventories for high school senior males and about equally predictive for females.

Research has shown that when congruency occurs between a person's expressed and measured interests, predictability of future career choices is noticeably enhanced (Borgen & Seling, 1978; Touchton & Magoon, 1977). Including level of certainty with high school students' expressed vocational choices was found to increase the predictability of those choices for future occupational status (Noeth & Jepsen, 1981).

The preceding studies have shown that expressed choice, particularly with the addition of self-reported and choice-related variables, has proven to be a reliable predictor of future career behaviors. However, little is known about the potential enhancement of these choices by standardized, career assessment measures. For example, it would seem that students who are assessed to be high in certain measureable career exploration and planning areas would be better predictors of their future career directions, given their advanced standing in such antecedent behaviors, than those who are assessed low in these same areas. Surely students who are more vocationally mature, or those who had experienced a greater amount of career-related knowledge and involvement, should be able to indicate with a greater degree of accuracy what their future career status will be. Indeed, that occupational knowledge can allow prospective employees to assess their compatibility with potential occupations and then utilize that information in career decision-making has already been conjectured (Grotevant & Durrett, 1980).

The present study was designed to test if students who were assessed to be high on important components of career development were able to predict their future occupation better than students who were assessed low in these same areas. The components included were the measures of career planning knowledge and career planning involvement which have been shown to be both important and independent aspects of career development (Jepsen & Prediger, 1981; Noeth & Prediger, 1978).

This study will extend our knowledge about the predictability of career behavior for expressed choice by incorporating predictors not previously examined. In addition, it will be of value to career guidance practitioners

who use these types of data in working with students in the career exploration and planning process. Knowing the relationship between such variables should help counselors to develop appropriate intervention strategies in this area. The results of the study should also enable us to further test the tenet of increasing realism as outlined in the developmental choice theory of Ginzberg, Ginsburg, Axelrad, and Herma (1951) and Ginzberg (1972). During the latter part of the Ginzberg et al. Tentative Period (i.e., transition stage), individuals around age 17 study the amount and type of preparation, financial rewards, and life-career circumstances of various occupations (Osipow, 1973). This increasing realism within the developmental process serves as the basis for the shift from occupational aspiration to expected occupational choice. The present study, adding to the work of Howell, Frese, and Sollie (1977), will examine the factor of increased realism (high career planning knowledge and involvement) versus lack of realism (low knowledge and involvement) as related to occupational choice and later employment.

Method

Subjects

Expressed vocational choices and other career-related measures were gathered for a national sample of juniors ($N = 9,307$) from 72 high schools as part of The American College Testing Program's (ACT) Nationwide Study of Student Career Development (Prediger, Roth, & Noeth, 1974). Three years later a comprehensive follow-up study was undertaken. Follow-up procedures involved mailing an extensive questionnaire to all subjects followed by two further mailings and phone calls or mailgrams to continued nonrespondents. A total

of 5,293 individuals, representing 66% of those for whom accurate addresses were available, responded to the survey.

The sample utilized for this study included those respondents who were working more than 20 hours per week at the time of the follow-up in March, 1976. This procedure eliminated part-time workers who might be working chiefly to finance other pursuits such as school or travel. This criterion was met by a total of 1,994 which included 1,037 females and 957 males. The remainder of the group were working less than half-time and/or were primarily enrolled in postsecondary educational institutions.

Instrumentation

Expressed vocational choice and measures of career development were collected through the administration of the Assessment of Career Development (ACD) (ACT, 1974). Students wrote their first vocational choice in response to the following item: "Print the name of the job that you are thinking about most." They then coded their response into the appropriate job family using the ACT occupational classification system. A complete description of the development and characteristics of this system is reported elsewhere (Prediger, 1976).

The ACT system allows all jobs to be categorized into 25 job families, i.e., related groups of jobs, which can be then further grouped into six Holland-type job clusters (i.e., business contact, business detail, technical, science, art, service). Both job family and job cluster categories are independent and mutually exclusive so that any occupation was assigned to only one of each of these categories. Students were found to be highly accurate in

coding their choices and, where they coded an incorrect job family, it was closely associated with the one they should have selected and generally within the same job cluster (ACT, 1974).

Two ACD scales were selected, representing areas of career development which should logically facilitate the career decision-making and planning process. These two scales have been shown to exhibit growth during the adolescent years and are relatively independent components of career development (Noeth & Prediger, 1978). In addition, when examined in conjunction with other career development instruments, they have been shown to relate to different functionally similar score clusters as well as different underlying dimensions of career development (Jepsen & Prediger, 1981).

While the ACD was developed to collect information likely to help identify students' career development status, its usefulness in predicting future behavior has been conjectured (ACT, 1974). Indeed, from a career counseling standpoint, the utility of these and similar types of measures for this purpose seems important as a guide of the degree to which students are prepared to make career decisions. The two ACD scales in this study are described below:

- o Career Planning Knowledge (CPK) -- a sampling of facts, concepts, and understandings useful in career planning as suggested by career development theory and guidance practice. This scale contains 40 items, multiple choice and true-false, where the student's score equals the number correct. The three areas covered within this scale focus on knowledge of basic career development principles (e.g. the continuous nature of career decision-making, impact of work on one's

life), knowledge of reality factors (e.g. post-high school education and training, labor market trends), and knowledge of the career planning process (e.g., how to proceed - sources of help, career information, and career decision-making processes).

- o Career Planning Involvement (CPI) -- an inventory of student involvement in exploratory and planning experiences available in the school and community both on a formal and informal basis. A score on this 32-item scale is based on a student's frequency of involvement averaged across the activities listed in all of the items. The four areas covered within this scale are seeking information (e.g., reading references, talking and discussion), doing and experiencing (e.g., engaging in self/career exploratory activities such as hobbies, school courses, part-time work, and practicing employment-seeking skills), focusing information on specific occupational preferences, and making career plans (e.g., planning activities and self-evaluation of career planning).

Eleventh grade scale reliabilities were .75 for Career Planning Knowledge (CPK) and .90 for Career Planning Involvement (CPI). Low intercorrelations existed between these two scales (i.e., .07). Further information on these scales can be found in the ACD Handbook (ACT, 1974).

The item on the 1976 follow-up questionnaire that covered present occupation asked "What specific kind of job do you have?" Respondents wrote in their specific job titles and coded them using a list of 61 occupational areas. The coding was checked by editors for accuracy and modified where

errors existed. Each person's coded occupational area was directly translated into an ACT job family and job cluster and then merged with the base year data for analyses.

Analyses

Analyses sought to determine how accurately high school juniors' expressed vocational choices combined separately and then in combination with the two selected ACD scales agreed with their occupations two years after high school graduation. Expressed choices and later occupations were both categorized by ACT job clusters. Students were categorized by thirds on each ACD scale using ACD 11th grade norms (ACT, 1974). Upper and lower thirds were compared. Analyses were done by sex and for the total group.

Agreement was estimated using two procedures: Weighted hit rate percentages and coefficient Kappa (Cohen, 1960). A "hit" was scored when the job cluster for expressed choice as a high school junior was the same as the job cluster for the job held three years later. Weighting procedures were used to allow for comparisons across job clusters. Weights assigned were the proportion of hits to the number of people whose choices were in each job cluster. Coefficient Kappa is an index of the proportion of agreement between two nominal variables after chance agreement has been removed. The maximum value that k can take is 1.0 occurring only when there is perfect agreement. When obtained agreement equals chance agreement, $k = 0$.

Results

Table 1 contains the percentages of hits between job choices alone and occupations as well as for job choices in combination with each and then both

of the ACD scales for each job cluster for the total group. Weighted mean percents are also given.

Expressed junior year vocational choices correctly predicted the actual occupation two years after high school for 38% of the total sample. Further data on this aspect of the study are reported in Noeth and Jepsen (1981). When combined for students with scores in the upper third on the ACD CPK and CPI Scales, the predictability of job choice slightly dropped to 33%, and 36%, respectively, and 32% when both scales were combined. When job choice was combined with the lower third of each ACD scale, weighted mean percents increased to 43% (CPK), 37% (CPI), and 43% (CPK + CPI).

The Kappa coefficient was .216 ($p < .001$) for job choice alone indicating that such choices and later occupations significantly exceeded chance agreement. When job choice was combined with the career development measures, Kappa coefficients for students in the upper third of each scale were .185, .209, and .184 for CPK, CPI, and CPK + CPI, respectively (all $p < .001$). These Kappas were not significantly different from the Kappa for job choice alone in predicting future occupation. When the formula for standard error was applied (Cohen, 1960), these Kappas were also not significantly different from those for students scoring in the lower third of the respective ACD scales (.241 - CPK, .199 - CPI, .228 - CPK+CPI).

Percentages of hits between job choices alone and occupations as well as for job choices in combination with ACD scales are shown by sex in Table 2. Weighted mean percents are also given.

Actual occupation was correctly predicted by vocational choice for 40% of the males and 35% of the females. The predictability of job choice dropped to

34%, 37%, and 35% for males and to 32%, 34%, and 27% for females when combined with scores on the upper third on ACD CPK, CPI, and CPK + CPI Scales, respectively. Weighted mean percents increased to 45%, (CPK) 42%, (CPI) and 45% (CPK+CPI) for males and to 40% (CPK) and 37% (CPK+CPI), with CPI remaining the same, for females.

The Kappa coefficient for job choice alone was .138 for males and .146 for females (both $p < .001$). When expressed choice was combined by sex for those scoring on the upper third of the ACD scales, Kappa coefficients were .145, .138, and .147 for males and .128, .145 and .107 for females on CPK, CPI, and CPK+CPI, respectively. All except CPK+CPI ($p < .05$) were significant at $p < .001$. These Kappas were not significantly different from the Kappa for job choice alone nor were they significantly different from those for students scoring in the lower third of the ACD scales (males - .120, .138, .114; females - .169, .149, .167, on CPK, CPI, CPK+CPI, respectively).

The higher Kappa but lower hit rate for the total group between upper and lower third of the CPI scale and for females on the scales both separately and together when combined with job choice represents the fact that the Kappa coefficient is affected by the marginal distributions as well as by the diagonal agreements while the hit rates are only a function of the diagonal agreements

Discussion

It seems clear that for this study, the inclusion of selected standardized measures of career development does not enhance the predictability of

actual occupation from expressed job choice. Students who scored in the upper third on either or both of the ACD Scales of Career Planning Knowledge and Career Planning Involvement were not significantly better predictors of their future occupational status than those for whom only expressed job choice was used as the predictor. In addition, measured career development did not discriminate those individuals assessed as high in the specific career exploration and planning areas as being any better predictors of their future career behaviors than those assessed as low in these same areas. Overall predictability was similar for both sexes for job choice alone and in combination with the ACD scales. Highest hit rates were in the traditional areas of business detail (females) and technical (males).

Why have high scores on standardized measures of career development failed to embellish the predictability of expressed occupational choice -- a simple self-report item? Should not students who are reliably assessed as being further along in various career development areas be better predictors of their future career behaviors? If not, then the practical utility of career development measures in certain counseling-related activities may be open to question. It also seems evident that the Ginzberg construct of increasing realism as impacting expected choice and later occupation is not supported. Those students who exhibited high levels of realism as measured by high career planning and involvement were not better predictors of their future occupation than those who were assessed low in these same areas, thus being considered lacking in career realism. In this study, occupational choice was not found to be a function of career knowledge and/or involvement

(i.e., realism) as subsequent vocational behavior did not reflect differentiation across various levels of the realism construct.

The findings of this study, to a certain extent, may reflect some interaction between the type of sample utilized and the concurrent labor market status quo. The group studied were only those individuals from a national probability sample of high school juniors (Prediger, Roth, & Noeth, 1974) who were employed more than half-time two years beyond graduation. Not included were those group members who were working half-time or less and/or who were enrolled in postsecondary educational programs. However, the distributions of this group on the two ACD scales studied, as well as on other ACD scales and specific ACD items, closely paralleled the distributions of the complete ACD eleventh grade sample on those same variables.

Essentially, the sample studied had entered the labor market without advanced training or education and two years beyond high school may simply not have been enough time to find, train for, and work in occupations of their choosing. Research has shown that congruence between aspirations and actual job does increase over time (Gottfredson, 1979). In addition, there is a certain reality factor, i.e., labor market conditions, that affects studies of this type. Clearly, the distribution of occupations available to individuals in this study influenced their entrance into particular jobs. If jobs matching their expressed choices were not available, they most likely would have needed to take ones that were available, perhaps regardless of whether their aspirations were matched or not. Other researchers have discussed the theoretical as well as the practical implications of this factor (Gottfredson, 1979; Gottfredson & Becker, 1981; Gottfredson, Holland, & Gottfredson, 1975).

Furthermore, the bulk of the sample studied appeared to enter unskilled or semi-skilled jobs typically held by workers of their same sex. It seems entirely possible that these individuals may have gravitated over time toward those activities and moved so that levels of career development in terms of knowledge and involvement did not affect, in terms of sex-role orientation and expectation, what essentially were "predestined" outcomes.

What do the results of this study recommend to us for counseling practice and future research? First of all, even when considering the status of the labor market, it appears that counselors cannot assume that students with assessed high levels of career development will necessarily be better predictors of their future career behaviors than those assessed low in these same areas. Counselors who select intervention strategies for student career exploration, decision-making, and planning, partly as a function of assessed level of career development, might now need to reexamine this assumption. This might be particularly true when specific directional concerns such as planned occupations, or perhaps intended college major, are at issue.

In addition, as no major overall sex differences were apparent, it seems that counselors might be able to assume that both males and females would profit from strategies based, in part, on similar assumptions of the unrelatedness of high career development to future career status. This seems consistent with other recommendations in this area (Grotevant & Durrett, 1980; Lunneborg, 1978). Finally, counseling strategies, of course, are functions of individual student characteristics. While the assumptions of individual benefit based upon choice-occupation congruence is a sound one,

there are cases where counseling strategies should be designed to interfere with such a pattern. Indeed, some have argued that seeking congruence might be inappropriate in certain cases (Betz, 1977; Solomone & McKenna, 1982; Super & Hall, 1978).

In terms of research, measures of career development should be explored further to determine their specific and diverse roles in predicting future career development behaviors. Assumptions about their usefulness must give way to empirical evidence supporting such utility. Application of research to selected models of career development will enhance our understanding and permit modification of theory should results support such actions.

Future research might include different types of samples and combine different kinds of career development measures with self-report, expressed choice items. This study, for example, did not include college graduates or students who had considerable job training, nor did it directly examine the construct of career maturity. Additional research might partition criterion variables into a sequence from soon after the career development measure was administered to much later in time. Examining labor market status concurrently with the pattern of job choices for these samples, particularly over time, would help examine the two primary interdependent components of choice - job congruence. Such investigations will help researchers gain a better understanding of the more viable roles of such measures throughout various stages of the career development process.

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Table 1

Hit Rate Percentages for Job Choice Alone and Then Combined with ACD Scales

Job clusters	Job choice alone	Job choice and CPK	Job choice and CPI	Job choice and CPK+ CPI
Business contact	23	24	23	31
Business detail	57	58	58	58
Technical	61	56	61	57
Science	6	5	6	7
Art	5	4	6	6
Service	31	33	30	33
Weighted mean percent	38	33	36	32
Total N	1994	645	765	275

Note. Only those scoring in the upper one-third of each ACD scale were included in this table.

Table 2

Hit Rate Percentages by Sex for Job Choice Alone and Then Combined with ACD Scales

Job clusters	Job choice alone		Job choice and CPK		Job choice and CPI		Job choice and CPK+CPI	
	M	F	M	F	M	F	M	F
Business contact	20	28	28	11	24	27	33	33
Business detail	19	67	26	67	22	62	25	54
Technical	67	16	63	24	68	28	64	25
Science	4	7	4	7	3	12	4	10
Art	8	2	6	2	7	7	8	
Service	26	32	35	32	23	32	33	
Weighted mean percent	40	35	34	32	37	34	35	27
Total N	957	1037	268	377	543	316	113	121

Note. Only those scoring in the upper one-third of each ACD scale were included in this table.